

IN THE UNITED STATES COURT OF FEDERAL CLAIMS

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|-------------------------------|---|---------------------------------------|
| BENCHMARK RESOURCES |) | |
| CORPORATION, GENTRY |) | |
| CORPORATION and SUNRISE |) | |
| HOLDING, INC., |) | |
| |) | No. 03-178L |
| Plaintiffs, |) | |
| |) | Honorable Christine Odell Cook Miller |
| v. |) | |
| |) | |
| THE UNITED STATES OF AMERICA, |) | |
| |) | |
| Defendant. |) | |

DECLARATION OF ALAN K. STAGG

I, Alan K. Stagg, pursuant to 28 U.S.C. § 1746, declare as follows:

I. Background and Experience

1. I am a registered professional geologist with 42 years of experience in the mining industry. I am President and Principal Economic Geologist of Stagg Resource Consultants, Inc., which is the successor to Alan K. Stagg & Associates, Inc., founded in 1975, and Stagg Engineering Services, Inc., founded in 1979. I have extensive experience in the Southern Tennessee Coal Field and I am familiar with the coal beds and enclosing strata on the Wharton Property, which is the subject of the above-captioned case, and on adjoining properties. Additionally, I evaluated the coal potential of the Wharton Property during the late 1970's on behalf of one or more clients. A substantial portion of my professional experience has involved the economic evaluation of coal properties and coal mining operations including the assessment and estimation of coal reserves. I have been qualified as an expert and testified on reserve estimation

issues in a variety of venues during the past 25 years. My qualifications, education, experience, and publications are set forth in detail in Exhibit 1 to this declaration.

2. I was retained by the United States to (1) review a variety of documents relating to the above-captioned case and (2) review and comment on a report prepared by Marcus A. Wiley, PE (“Wiley”) of Wiley Consulting, LLC dated April 5, 2006 (the “Wiley Report”). I was asked to focus my review on the methods, procedures, and standards used in the generation of the Wiley Report. I was not asked to independently estimate coal reserves on the Wharton Property or to assess the economic viability of mining the property at a particular date.

II. The Wiley Report

3. The Wiley Report is intended to, as evidenced by its title, constitute a “Report of Coal Reserves Contained within The Rock Creek Watershed Boundary As Designated by the Office of Surface Mining To be Unsuitable for Surface Mining.” It should be noted, however, that the report also presents estimates of coal reserves lying outside the Rock Creek watershed boundary as delineated by the OSM Designation dated March 24, 1987.

4. The area included in the Wiley Report is that property generally termed the Wharton Property, consisting of ownership of the fee simple estate or ownership of the mineral estate over approximately 29,000 contiguous acres.

5. In the Wiley Report, tonnage estimates are presented in the mining categories of surface and underground and further classified as either lying inside or outside the Rock Creek Watershed (“RCWS”). All tonnage is classified as *reserves*. It is Wiley’s opinion that there are 82.4 million tons of coal that are potentially recoverable from the Wharton Property, of which 47.9 million tons lie within the RCWS. It is also his opinion that mining of these 47.9 million tons is effectively precluded by the OSM Designation.

6. Wiley further opines that the 34.5 million tons that lie outside the RCWS may be technically mineable, but that “[. . .] the overall impact to the property is that not enough coal is left contiguously mineable to amortize the capital cost for infrastructure (office, shop, warehouse, coal preparation plant, portal, ventilation, rail access, load-out, employee training, continuous miners, belt haulage, surface mining equipment, sediment control, etc.) to justify mining any tonnage at all.” (Wiley 3). His final opinion is “[. . .] that the designation by OSM of unsuitability within the Rock Creek watershed boundary essentially eliminates the viability of permitting and mining the entire Wharton tract.” (Wiley 3).

7. The coal industry relies upon generally accepted techniques and standards in estimating, classifying, and reporting tonnage that is represented to be economically viable to mine (that is, *reserves*). As set forth in greater detail below, the Wiley Report fails to meet these generally accepted techniques and standards for estimating and reporting coal reserves. As a result, the conclusions contained in the Wiley Report cannot be relied upon because they are not supported by disclosure of the underlying data and assumptions and thus cannot be independently verified.

III. Generally Accepted Industry Standards for Reserve Estimation

8. The estimation of coal reserves is a dynamic process that is the subject of continuing refinement and standardization of both terminology and techniques, and it is the practice in the coal industry to cite the standard(s) being used when estimating and reporting coal reserves. The Wiley Report is notably silent in this regard.

9. One of the seminal publications in the United States in this regard is U.S. Geological Survey Bulletin 1450-B titled *Coal Resource Classification System of the U.S. Bureau of Mines and the U.S. Geological Survey*. This document was published jointly by the U.S. Bureau of Mines (“BOM”) and the U.S. Geological Survey (“USGS”) in 1976. The system presented in Bulletin

1450-B was widely adopted by coal industry professionals who specialized in reserve estimation.

10. In 1977, BOM and USGS decided that the coal resource classification system contained in Bulletin 1450-B “[. . .] should be revised and expanded to provide a more definitive and less ambiguous coal resource classification system.” (Wood, et al. 1). Accordingly, the two agencies published Circular 831 titled *Principles of a Resource/Reserve Classification for Minerals* in 1980. The classification system presented in this publication covered all minerals and thus satisfied the needs of the BOM, which no longer had responsibility for coal resource classification. However, the USGS believed that further refinement of the classification system was needed for coal.

11. In response to this need, the USGS developed a revision of Circular 831, with two main objectives stated: (1) to provide detailed information lacking in Bulletin 1450-B; and (2) to provide standard definitions, criteria, guidelines, and methods required for uniform application of the principles outlined in Circular 831. This publication, which is titled *Coal Resource Classification System of the U.S. Geological Survey*, was published as Circular 891 in 1983. The system presented in this publication has become the generally accepted standard for coal reserve classification among coal industry professionals, both those directly employed in the by industry and those who provide consulting services to industry. Circular 891 is presented in Exhibit 2 to this declaration.

12. In 1988, the Society for Mining, Metallurgy, and Exploration, Inc. (“SME”), the largest society in the U.S. for mining professionals, undertook the development of guidelines for the public reporting of exploration information, resources, and reserves. This resulted in the publication of a document titled *A Guide for Reporting Exploration Information, Resources, and Reserves* in 1992. In 1999, an update of this document, known as the *1999 SME Guide*, was published.

13. The 1999 SME Guide underwent a substantial review in response to issues raised by international efforts to standardize resource and reserve classification and reporting systems and, domestically, issues arising from the public reporting requirements of the U.S. Securities and Exchange Commission ("SEC") in its *Industry Guide 7*. The resultant document, which is titled *The SME Guide for Reporting Exploration Results, Mineral Resources, and Mineral Reserves* was published in April 2005 (the "2005 SME Guide"). The main principles governing the development and application of the 2005 SME Guide are transparency, materiality, and competence. The 2005 SME Guide contains a section addressing reporting matters relating specifically to coal. The 2005 Guide is presented in Exhibit 3 to this declaration.

14. I have been actively involved in the assessment, estimation, and reporting of coal reserves for 35 years throughout the United States and it is my experience that the resource/reserve classification system presented in Circular 891 and the principles embodied in the 2005 SME Guide are generally used by industry professionals who assess, estimate, and report coal reserves. Of particular note in these classification systems is the emphasis on defining terms and on establishing the level of geologic assurance.

IV. The Wiley Report Fails to Meet Accepted Industry Standards

15. In my experience, there are a number of basic types of reports in which reserve estimates are presented, broadly classifiable into summary reports, complete reserve reports, and expert reports. In complete reserve reports and in expert reports, transparency is expected, with all key assumptions and criteria clearly identified, all salient terms defined, the factual data from which estimates were developed presented in full, the methodologies employed fully explained, and the classification system explained. In reviewing the Wiley Report, a number of significant deficiencies were noted including the failure to define key classification terms, insufficient data from which to evaluate tonnage estimates, and a failure to establish geological assurance levels

for the estimates contained in the report.

A. Definitional Issues

16. Regarding the definition of classification terms, it is a fact that many common terms have been, and continue to be, used loosely and often interchangeably. One notable example is the term *reserve*. In every coal classification system of which I am aware, the term *reserve* by definition means the economically recoverable portion of the coal in the ground (the latter also termed *coal in-place*). Notwithstanding this fact, it is not uncommon to see the term used synonymously with the term *tons* by those unfamiliar with reserve estimation and reporting, with no economic connotation implied. Similarly, the term *resource* means tonnage for which economic extraction is currently or potentially feasible, but for which this determination has not been made. All, or some portion, of the tonnage classified a *resource* may not be economically recoverable at the time of the estimation. It is also not uncommon to see the terms *reserve* and *resource* used interchangeably by many in the industry that are unfamiliar with reserve estimation and reporting.

17. The Wiley Report fails to define key classification terms, most notably *reserve* and *recoverable reserve*. If the term *reserve* is intended to mean *economically recoverable in the market that existed at the time of the estimate*, which is the generally accepted definition of *reserve*, there is no statement to this effect in the Wiley Report. Even if the reader assumes that this is the definition being used, there is no indication of the time frame in which this definition is being applied, to wit: is the date of economic determination (that is, classification as a *reserve*) the date the Decision was signed, the date a complaint by Benchmark in this matter was lodged, the date of the Wiley Report, or some other date? Assuming that the term *reserve* is being used in its strict economic sense as it should be, one cannot assess the reasonableness of the representation that the tonnage estimated could be economically recoverable if, at a minimum, the effective date of the representation is not known. Coal selling prices and coal market

dynamics tend to be cyclic over time and what constitutes reserves at any given period will not necessarily constitute reserves at some other period. For example, coal in a given deposit may be uneconomic to mine when selling prices are \$25 a ton but economic to mine when selling prices are \$40 a ton.

18. A second definitional shortcoming in the Wiley Report is the use of the term *recoverable reserve*. Under the classification system used in Circular 891, this term is redundant since, by definition, that which comprises a *reserve* is the recoverable portion (Wood, et al. 18). Similarly, in the 2005 SME Guide, the use of the term *reserve* with respect to coal is to represent the saleable product (SEC Reserves Working Group, et al, 31).

B. Tonnage Estimates

19. In reporting reserves within the coal mining industry, it is the practice to delineate tonnage estimates on the basis of the type of mining by which extraction is forecast. The most basic delineation is into the categories of surface and underground mining. These categories are often expanded, with surface-mineable coal reported in sub-categories such as contour strip, area strip, mountaintop removal, auger mining, and highwall mining. Underground-mineable coal is often further delineated into the categories of room-and-pillar mining and longwall mining. Reporting in this fashion is important because the economics of mining vary considerably amongst these categories and without knowledge of the type of mining indicated, the reader cannot judge the reasonableness of the inclusion of the tonnage.

20. The Wiley Report fails to identify the key criteria that were used in estimating tonnage for both surface-mineable coal and underground-mineable coal.

1. Tonnage Estimates of Surface-Mineable Coal

21. In assessing the economics of extracting tonnage in the contour strip category, which appears to be the category used in the Wiley Report under the heading *Surface*, two key criteria are relevant—the minimum bed thickness and the maximum overburden-to-coal ratio that will be used (Kennedy 377). Minimum bed thickness is of particular relevance when multiple beds and benches of coal are to be recovered from a contour strip cut. In many contour strip operations, only a single bed of coal is to be recovered, and the economics of mining are driven by the thickness of this bed. This bed can be designated the basal bed. In other instances, however, there may be benches of coal lying above the basal bed that can be recovered from the cut. In such instances, it may be economic to recover benches that have a minimum thickness less than that of the basal bed. This minimum thickness must also be established. The Wiley Report does not state the bed thickness used in estimating tonnage in the surface mine category in either of these circumstances.

22. The overburden-to-coal ratio is the relationship between the volume of overburden (that is, the rock lying above and between the target coal beds) that must be removed to recover a ton of coal. This relationship is typically expressed as a mathematic ratio, such as 10:1 or 15:1. Overburden is generally denominated as *bank cubic yards*, which means the undisturbed rock lying in the ground prior to blasting. In surface mining, the vast majority of the direct mining cost is incurred in removing the overburden. It thus follows that as overburden volumes increase, direct mining costs increase. Without knowledge of the assumptions regarding the overburden-to-coal ratios used in estimating tonnage, it is not possible to assess the economic viability of mining the coal. The Wiley Report does not state the overburden-to-coal ratio(s) used in estimating tonnage in the surface mine category.

2. Tonnage Estimates of Underground-Mineable Coal

23. In assessing the economics of extracting tonnage in the underground category, two key criteria are required—the minimum bed thickness and the amount of in-bed parting (that is, non-coal material) that is present in the coal bed (Leonard, et al. 4-21). These two criteria are important because in underground mining, the major portion of the direct mining costs is incurred in extracting and processing the coal. There is thus a minimum bed thickness below which extraction is not economic at a given coal selling price. If the bed thickness assumed is less than the minimum thickness of the mining interval that can be taken by the mining equipment, extraneous rock—termed *out-of-bed dilution*—must be taken. If the bed thickness assumed is greater than the minimum thickness of the interval that can be taken by the mining equipment, any non-coal parting material within the bed will also comprise extraneous material. Non-coal material taken during mining, whether from out-of-bed dilution or from partings, is separated from the coal by mechanical processing, a process also termed *washing*. Because the cost of mining and processing a ton of non-coal material is at least as expensive as the cost of mining and processing a ton of coal, every ton of non-coal material that is discarded increases the effective cost of the coal that is recovered and available for sale in direct relationship to the proportion of the two materials. Thus, estimates of minimum bed thickness and the maximum amount of in-bed parting material are crucial to an assessment of the economic viability of mining. The Wiley Report does not state the minimum bed thickness nor the maximum amount of in-bed parting material that was used in establishing economic recoverability.

C. Geologic Assurance of Estimates

24. The level of geologic assurance represents the relative degree of reliability of the estimated tonnage and the forecast quality. This is done through the use of modifiers, specifically the terms *measured*, *indicated*, and *inferred* in the system presented in Circular 891 (Wood, et al.

18). Other systems use the terms *proved*, *probable*, and *possible*.

- a. The term *measured* implies the highest level of geologic assurance and is based on extrapolating thickness and quality data a defined distance from each point of measurement. In general, this distance is 1,320 feet (that is, a quarter mile) for coal.
- b. The term *indicated* implies a lesser degree of assurance concerning both thickness and quality, with the standard distance over which data are extrapolated beyond the quarter mile distance being 3,960 feet (that is, three-quarters of a mile).
- c. The term *inferred* essentially characterizes tonnage that lies between three-quarters and three miles beyond a data point, although the majority of experienced estimators tend to avoid estimating tonnage in this classification because of its uncertainty.

25. Although Circular 891 provides the recommended distances from each data point for the different levels of geological assurance as discussed above, generally accepted industry standards call for reductions in these distances in some circumstances. For example, for coal beds known to be erratic in their thickness and/or occurrence – which are defining characteristics of coal beds in the Southern Tennessee Coal Field – the estimator is expected to reduce the standard intervals to those that more accurately reflect the distances over which one can meaningfully extrapolate data (Luther 37; Thompson 25).

26. The Wiley Report contains significant deficiencies involving the categorization of tonnage estimates by their relative degree of geologic assurance. In the Wiley Report, tonnage in each of the surface and the underground mine categories is lumped together, with no effort made to distinguish between tonnage in relatively close proximity to data points and tonnage that is progressively further from such points. In assessing the significance of tonnage estimates, one

would attach a higher degree of significance to tonnage estimates in the measured category, which have a relatively high degree of assurance, than to tonnage estimates in the inferred category, which are considered to have a sufficiently low degree of assurance so as to render them speculative. The Wiley Report does not use these, or any other, assurance categories and the reader thus cannot assess the significance or the reliability of the tonnage estimates.

27. Under current generally accepted industry practice in estimating coal reserves, support is required when categorically stating that estimates comprise *reserves* (SEC Reserves Working Group, et al. 31). At a minimum, this requires an enumeration of the economic assumptions supporting this characterization, including a tabulation of forecast mining economics on which the assumptions used in defining what constitutes a *reserve* are based, as well as the assumed selling price of coal. In this fashion, the profitability (or lack thereof) of mining the tonnage included in the estimates is forecast and it can be established whether this would result in an economically viable venture. This is also a notable requirement in an expert report, in which the basis and reasons in support of the opinions formed are to be provided. None of the economic assumptions that would support classifying tonnage as a *reserve* are presented in the Wiley Report.

V. Wiley Report Fails to Support Conclusions with Generally Accepted Supporting Data

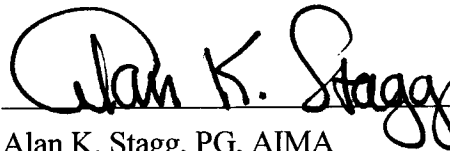
28. An additional deficiency in the Wiley Report is the conclusion that the OSM Designation effectively precludes mining all coal lying outside the Hall, Middle Creek, and Rock Creek gorges but within the RCWS. According to Wiley, this conclusion is based on his opinion that “[. . .] due to the potential surface impact from underground mining, such as possible subsidence and probable hydrologic consequences, that the underground mining of coal from areas contained within the Rock Creek watershed boundary are also precluded from mining due to the OSM designation of unsuitability within the drainage areas.” (Wiley 3). The Wiley Report provides no supporting data that subsidence would occur if underground mining was conducted nor what the

probable hydrologic consequences of underground mining would be, much less having knowledge of what OSM's response to these issues would be. It should be noted that if this conclusion is not true, an estimated 74.8 million tons of Wiley's estimate of recoverable coal remains that does not lie within the three gorges or within the Sewanee coal bed in the remainder of the RCWS.

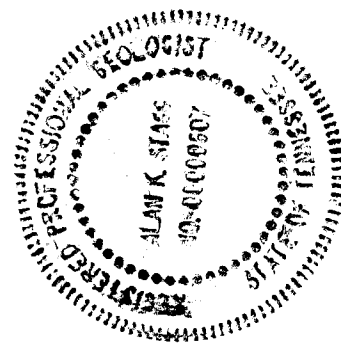
29. The Wiley Report effectively presents two opinions regarding economic viability. The first is that all the tonnage estimated within the Wharton Property, when considered in the aggregate, was economically recoverable at some unspecified date. No support is provided for this implicit opinion. The second is that by excluding all tonnage lying within the RCWS, which, as discussed in paragraph 28, is an assumption for which no support is provided, the remaining tonnage lying outside the RCWS would no longer be economically viable to recover. The report states that this is because "[. . .] the overall impact to the property is that not enough coal is left contiguously mineable to amortize the capital cost for infrastructure (office, shop, warehouse, coal preparation plant, portal, ventilation, rail access, load-out, employee training, continuous miners, belt haulage, surface mining equipment, sediment control, etc.) to justify mining any tonnage at all." (Wiley 3). Neither support nor justification is provided for this broad and effectively all-encompassing statement, which effectively concludes that 34.5 million tons of coal in individual bodies within relative proximity to each other could not be economically developed. This is in direct contradiction to mining practices in the Appalachian Coal Field that have occurred over a span of decades and which continue to this date.

In accordance with 28 U.S.C. § 1746, I hereby declare and affirm under penalty of perjury that the foregoing is true and correct.

Executed this 28th day of September, 2006.

A handwritten signature in black ink that reads "Alan K. Stagg". The signature is written over a horizontal line.

Alan K. Stagg, PG, AIMA
Tennessee Registered Professional Geologist No. 607
Registration Expires February 1, 2008



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